

Assist. Prof. Dr. Tihomir Ivanov

CURRICULUM VITAE

Personal Information:

Born:	27.05.1989, Varna, Bulgaria
Address:	Faculty of Mathematics and Informatics, 5 James Bouchier Blvd., 1164 Sofia, Bulgaria
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Education:

PhD in Mathematics	<i>Years of study</i>	2015-2018
	<i>Teaching Institution</i>	Institute of Mathematics and Informatics, Bulgarian Academy of Sciences
	<i>Specialization</i>	Mathematical Modeling and Applications of Mathematics
MSc. in Applied Mathematics	<i>Years of study</i>	2012-2014
	<i>Teaching Institution</i>	Sofia University "St. Kliment Ohridski", Faculty of Mathematics and Informatics
	<i>Specialization</i>	Computational Mathematics and Mathematical Modeling
BSc. in Computer Science	<i>Years of study</i>	2008-2012
	<i>Teaching Institution</i>	Sofia University "St. Kliment Ohridski", Faculty of Mathematics and Informatics
High School Education	<i>Years of study</i>	2003-2008
	<i>Teaching Institution</i>	Mathematical high school "Dr Petar Beron", Varna

Professional experience, scientific interests

Sofia University, Faculty of Mathematics and Informatics	<ul style="list-style-type: none"> • Since 2014 – Assistant Professor (Dept. "Numerical Methods and Algorithms") • 2012-2014 – Part time instructor
Institute of Mathematics and Informatics, Bulgarian Academy of Sciences	<ul style="list-style-type: none"> • 2014-2019 – Assistant Professor (Dept. "Mathematical Modelling and Numerical Analysis") • 2013-2014 – Mathematician
Others (short-term)	<ul style="list-style-type: none"> • 2015, July – Instructor at the ECMI Modelling week, Lisbon, Portugal • 2015, September – Instructor at the Preparatory

	Modelling week, Sofia, Bulgaria
Scientific interests	<ul style="list-style-type: none"> • Industrial mathematics and mathematical modelling of real processes • Dynamical systems and applications in Biology, Biotechnology and Medicine • Numerical methods for differential equations • Data analysis and parametric identification problems
Selected projects	<ul style="list-style-type: none"> • “Mathematical modelling of some types of bioprocesses”, postdoc project, Sofia University • “Mathematical modelling and applications of numerical methods”, contracts with Sofia University Science Fund, 2020, 2022 (coordinator) • “Mathematical methods and big data analysis”, contract 3238/2017 with Scientific Research Centre, Sofia University (coordinator) • “Calibration techniques for accelerometers and gyros”, contract with “BG Drilling Solutions” company 2017 (coordinator)
Teaching subjects	<ul style="list-style-type: none"> • Numerical Methods for Differential Equations, Finite Element Method • Theoretical Foundations of Industrial Mathematics • Applications of Mathematics for Modeling Real Processes • Numerical Methods, Numerical Linear Algebra

Languages:

- English – excellent
- Russian – average

Computer skills

- Very good knowledge in the CAS Mathematica, C#, LaTeX
- Knowledge in Matlab, Maple, Java
- Web-programming – basic knowledge in HTML5, PHP, JavaScript

Participation in conferences, workshops, and summer schools

- Talks delivered at the international conferences BIOMATH (2013, 2014, 2015), BGSIAM (2013, 2014, 2016), ECMI 2016 (invited talk), the Doctoral Conference in Mathematics and Informatics (2015), and the Spring Scientific Session of FMI, SU (2015,2017,2018)
- Participated in the international workshops European Study Group with Industry (2013, 2014)
- Participated in the European Summer School in Industry with Modeling Week (Madrid, 2013)

List of Publications

1. M. Zarcheva, T. Ivanov, Numerical simulations of the process of adsorption onto activated carbon in water treatment applications, To appear in *Studies in Computational Intelligence*, SJR: 0.183.
2. Z.D. Nedyalkova, T.B. Ivanov, Qualitative analysis of a mathematical model of calcium dynamics inside the muscle cell, *Annual of Sofia University "St. Kliment Ohridski", Faculty of Mathematics and Informatics* 106 (2019) 127–151.
3. T. Ivanov, G. Lyutskanova-Zhekova, Initial calibration of MEMS accelerometers, used for measuring inclination and toolface, *Studies in Computational Intelligence* 793 (2019) 177-188, SJR(2019): 0.245. http://dx.doi.org/10.1007/978-3-319-97277-0_14
4. T. Ivanov, G. Velikova, Data fitting in Monod-type models with nonlinear growth rates, *Biomath Comm.* 5 (2018), <http://dx.doi.org/10.11145/bmc.2018.04.187>.
5. T. Ivanov, N. Dimitrova, Qualitative effects of introducing nonlinear birth and death rates for the predator in a predator-prey type model, *Biomath* 6 (2017), 1703167, <http://dx.doi.org/10.11145/j.biomath.2017.03.167>.
6. T. Ivanov, N. Dimitrova, A predator-prey model with generic birth and death rates for the predator and Beddington-DeAngelis functional response. *Mathematics and Computers in Simulation*, Elsevier, 133 (2017) 111-123, <http://dx.doi.org/10.1016/j.matcom.2015.08.003>, IF(2016):1.218.
7. T. Ivanov, E. Nikolova, Stability analysis of an inflation of internally-pressurized hyperelastic spherical membranes connected to aneurysm progression. In: *Advanced Computing in Industrial Mathematics* (Eds. K. Georgiev, M. Todorov, I. Georgiev), *Studies in Computational Intelligence* 681 (2017) 61-74, <http://dx.doi.org/10.1007/978-3-319-49544-6>, SJR(2015): 0.187.
8. T. Ivanov, G. Lyutskanova, D. Aleksov, O. Kounchev, Laboratory calibration of MEMS rate sensors, *ESGI'120 Problems and Final Reports*, ISBN 978-619-7223-31-6 (2016) 68-76.
9. K. Danov, S. Dimova, T. Ivanov, Y. Novev, Shape analysis of a rotating axisymmetric drop in gravitational field: Comparison of numerical schemes for real-time data processing. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 489 (2016) 75–85, <http://dx.doi.org/10.1016/j.colsurfa.2015.10.028>, IF(2015): 2.760.
10. T. Ivanov, N. Dimitrova, Analysis of a bioreactor model with microbial growth phases and spatial dispersal. *Biomath Communications* 2 (2015).
11. E. Nikolova, T. Ivanov, Mathematical modelling and stability analysis of an inflation of a thin-walled hyperelastic tube with applications to abdominal aortic aneurysms. *Series on Biomechanics* 29 (2015) 78–84.
12. I. Bazhlekov, S. Dimova, P. Hjorth, T. Ivanov, A. Slavova, R. Yordanova, Relaxation of surface tension after a large initial perturbation. *ESGI'104 Problems and Final Reports*, ISBN 978-954-9526-87-5 (2014) 48–59.
13. Т. Иванов, К. Илиева-Стойчева, Числени симулации и анализ на резултатите от прилагането на математически модел с променливи коефициенти на ударно

взаимодействие на пробивен инструмент от минната механизация. Съюз на учените в България, Научни трудове, Том V (2014) 645–652.

14. К. Илиева-Стойчева, Т. Иванов, Математически модел с променливи коефициенти на ударно взаимодействие на пробивен инструмент от минната механизация. Годишник на МГУ (2014) 21–23.

15. I. Georgieva, C. Hofreither, T. Ilieva, T. Ivanov, S. Nakov, Laboratory calibration of a MEMS accelerometer sensor. ESGI'95 Problems and Final Reports, ISBN 978-954-9526-84-4 (2013).

List of Supervised MSc Theses (at Sofia University)

1. V. Pashov, GPU implementation of the FEM for the Navier-Stokes equations, 2021.
2. D. Trendafilov, Cloth Simulation, 2021.
3. M. Zarcheva, Numerical simulations of the process of adsorption onto activated carbon in water treatment applications, 2020.
4. A. Manov, Computer Simulations of demyelination patterns in multiple sclerosis, 2020.
5. Z. Nedyalkova, Multiphysics simulations of the process of neuromuscular activation, 2019.
6. K. Boyanova, Mathematical modelling and numerical experiments of tissue invasion of cancer cells, 2017.
7. G. Lyutskanova, Mathematical modelling of anisotropic surfaces with elastic properties. Applications to red blood cell modelling, 2016.
8. G. Velikova, Mathematical models of biological systems under inhibiting conditions, Sofia University, 2015.